

1. Please explain in detail why the Special Temporary Authority is necessary.

Rockwell Collins, Inc. (Rockwell Collins) hereby requests a Special Temporary Authorization to perform testing of a secure wireless networked communications system. The planned experiment will test base-to-mobile backbone and mobile-to-mobile communications using switched traffic routing. The communications system we are testing will utilize the following frequencies for test and evaluation of a new spread spectrum adaptive frequencies communications network which will utilize the following frequencies; 414 MHz, 434 MHz, 906 MHz, and 918 MHz. This system is being developed under a combination of Rockwell Collins, Communications Electronics Command (“CECOM”), and Defense Advanced Research Project Agency (“DARPA”) funding, contract number DAAB07-01-3-L533. The testing program relies on transceivers that will quickly tune between 20 and 2500 MHz. The ultimate user of this proposed system will be the US and allied military, and is intended for military use only where global deployment into unknown spectral conditions and occupancy is required. This STA is to verify system operation in a live radio frequency environment to substantiate simulation and lab data.

A second purpose of the experiment is to avoid interference, jammers and to optimize communications capacity as a function of the local geophysical environment (e.g., urban, forest, mountainous, etc.) under widely varying propagation conditions. This is to say that our system is capable of automatically and adaptively seeking the optimum communications channels from the frequency spectrum allocated to it, similar to HF Automatic Link Establishment protocols, but instead operating in the VHF/UHF line-of-sight (LOS) bands and propagation environment.

2. Please explain the purpose of operation.

Operations under the requested STA will consist of testing a secure wireless communications system composed of a variety of terminals capable of transmitting and receiving the following radio frequencies: 414 MHz, 434 MHz, 906 MHz, and 918 MHz at effective radiated power levels of up to 20 Watts. The planned experiment will test base-to-mobile backbone and mobile-to-mobile communications using switched traffic routing. The base station is planned to use low frequency allocation and is designed for links up to 10 km. Mobile-to-mobile operation is planned for clusters of stations at higher frequencies for operation within 1 km.

Actual transmit time is anticipated to be approximately 25% of operating time, scatters across multiple channels. The network will operate with 12 millisecond packet slots, with .5 to 11 milliseconds of each slot occupied by a transmitted signal depending upon the instantaneous traffic load.

The signal density will be low in this experiment because the modulation is a Binary Phase Shift Key spread spectrum signal with a fixed 6.4 MHz chip rate, and variable data rates from 1.6 Mbps down to 0.2 Mbps. The signal envelope is fixed at 12.8 MHz bandwidth. The second lobe is -60 dBc and employs waveshaping. The tolerance will be +/- 1dB, +/- 2.5 Watts and the power is adjustable downward to 100 mW.